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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KAU, STEVEN Y

ART UNIT

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2625

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/725,397	Applicant(s) KATO ET AL.	
	Examiner STEVEN KAU	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6,7,9,10,12,13,15,16,18 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,7,9,10,12,13,15,16,18 and 25-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/20/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I (shown in Figs. 2 and 3, and first and second paragraph, page 25) in the reply filed on January 24, 2008 is acknowledged.

Applicant directs all pending claims, including claims 1, 2, 4, 5, 7, 9, 10, 12, 13, 15, 16, 18 and 25 to 27, that read on Species I. Applicant's election in response to the restriction requirement has been fully considered and persuasive. The restriction requirement is vacated and all pending claims, including claims 1, 2, 4, 5, 7, 9, 10, 12, 13, 15, 16, 18 and 25 to 27, will be examined in this office action.

Response to Arguments

2. This action is responsive to the following communication: an Amendment filed on November 19, 2007.

- Applicant's arguments, "Claims 19 to 24 were rejections under 35 U.S.C. § 101", Page 12, filed November 19, 2007, have been fully considered and are persuasive. The rejection of claims 1-5 and 17-20 under 35 U.S.C. § 101 has been withdrawn from the record because these claims have been cancelled.
- Applicant's arguments, "claims 3, 6, 9, 12 and 24 were rejection under 35 U.S.C. § 112", Page 12, November 19, 2007, have been fully considered

and are persuasive. The rejection of claims 3, 6, 9, 12 and 24 under 35 U.S.C. § 112 Second Paragraph has been withdrawn.

- Applicant's arguments filed on March 26, 2007 have been fully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, 4, 6, 25, 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3, 4, 6, 25 and 26 are apparatus claims and claim 27 is a computer-readable storage medium claim. These claims recite the following limitations, (A) "first processing means for executing"; (B) "second processing means for executing"; (C) "error diffusion processing control means for making controlling".

(a). Means A. recites means for executing first process. The specification does not disclose a specific hardware, specific software, or a combination thereof for this function;

(b). Means B. recites means for executing second process different than the first process. The specification does not disclose specific hardware, specific software, or a combination thereof for this function;

(c) Means C. recites means for error diffusion process control of both first and

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second error diffusion processes. The specification does not disclose specific hardware, specific software, or a combination thereof for this limitation.

Applicant invokes 112 6th in claims 1, 3, 4, 6, 25 and 26. However, applicant's disclosure does not provide any detail structural information for the means-plus function. Without defining the structure for means-plus functions, one skilled in the art would not be able to understand what structure will perform for the recited function. Therefore any means that perform the equivalent functionality will be reasonable utilized by one of ordinary skill in the art. See MPEP Section 2181.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 3, 4, 6, 7, 9, 10, 12, 13, 15, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuyama et al (Mizuyama) (US 6,813,043) in view of Tanaka et al (Tanaka) (US 6,917,446) and further in view of Nabeshima (US 7,099,045).**

Regarding claim 1.

Mizuyama discloses an image processing apparatus for executing an error diffusion process to ~~multivalued image data consisting of a plurality of~~ density components (**Abstract, col 7, lines 19-37**), comprising:
first processing means for executing the error diffusion process by changing at least one of a quantization threshold value (**e.g. varied the threshold value in brightness, col 12, lines 23-33**) and a quantization diffusion coefficient (**e.g. weight factors are carefully selected, col 7, lines 19-55**) which are used for ~~said the~~ error diffusion process on the basis of ~~a value of said multivalued image data~~ information on one of the density components to be processed (**e.g. high and low density value, col 8, lines 8-62**) ~~or a value calculated from said multivalued image data value~~; second processing means for executing the error diffusion process by setting, into fixed values, (**e.g. Mizuyama discloses embodiments using fixed saturation threshold, col 14, lines 5-14**) the quantization threshold value and the quantization diffusion coefficient which are used for ~~said the~~ error diffusion process ~~into fixed values~~ (**e.g. threshold value of brightness & saturation, and weight factor, col 7, lines 19-37, & col 12, lines 23-33**); and error diffusion processing control means for making controlling to execute by the first processing means (**col 12, lines 23-33**) and executing, by the second processing means (**col 14, lines 5-14**).

Mizuyama does not explicitly teach density components of a similar color among the plurality of density components by executing the error diffusion process to the density component whose highest density which can be expressed is low, and the error

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diffusion process to the density component whose highest density which can be expressed is high.

Tanaka teaches density components of a similar color among the plurality of density components by executing the error diffusion process to the density component whose highest density which can be expressed is low (**e.g. black pixel with high density and smaller matrix element value, col 20, lines 28-34**).

Nabeshima teaches the error diffusion process to the density component whose highest density which can be expressed is high (**e.g. output of quantization signal is "high" indicating halftone dot area is large or a halftone-dot area with high density; col 11, lines 45-53**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Mizuyama to include teaches density components of a similar color among the plurality of density components by executing the error diffusion process to the density component whose highest density which can be expressed is low taught by Tanaka to improve error diffusion process (col 4, lines 29-34, Tanaka); and then to have modified Mizuyama combining Mizuyama with Tanaka to include the error diffusion process to the density component whose highest density which can be expressed is high taught by Nabeshima to decrease a misjudgment between a halftone-dot area and a character edge area (col 2, lines 54-61, Nabeshima).

Regarding claim 3.

Mizuyama discloses wherein said first processing step is an error diffusion process for executing quantization on the basis of information of the other density

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components among said plurality of density components {e.g. grayscale, colors density, etc.} (col 9, lines 42-59).

Regarding claim 4.

Claim 4 recites identical features as claim 1, except claim 4 is a control apparatus claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 4.

Regarding claim 6.

Claim 6 recites identical features as claim 3, except claim 4 is a control apparatus claim. Thus, arguments similar to that presented above for claim 3 are also equally applicable to claim 6.

Regarding claim 7.

Claim 7 recites identical features as claim 1, except claim 4 is an image process method claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 7.

Regarding claim 9.

Claim 9 recites identical features as claim 3, except claim 9 is an image process method claim. Thus, arguments similar to that presented above for claim 3 are also equally applicable to claim 9.

Regarding claim 10.

Claim 10 recites identical features as claim 4, except claim 10 is a print control method claim. Thus, arguments similar to that presented above for claim 4 are also equally applicable to claim 10.

Regarding claim 12.

Claim 12 recites identical features as claim 6, except claim 12 is a print control method claim. Thus, arguments similar to that presented above for claim 6 are also equally applicable to claim 12.

Regarding claim 13.

Claim 13 recites identical features as claim 7, except claim 13 is a computer-readable storage medium claim. Thus, arguments similar to that presented above for claim 7 are also equally applicable to claim 13.

Regarding claim 15.

Claim 15 recites identical features as claim 9, except claim 15 is a computer-readable storage medium claim. Thus, arguments similar to that presented above for claim 9 are also equally applicable to claim 15.

Regarding claim 16.

Claim 16 recites identical features as claim 10, except claim 16 is a computer-readable storage medium claim. Thus, arguments similar to that presented above for claim 10 are also equally applicable to claim 16.

Regarding claim 18.

Claim 18 recites identical features as claim 12, except claim 18 is a computer-readable storage medium claim. Thus, arguments similar to that presented above for claim 12 are also equally applicable to claim 18.

6. Claims 25, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuyama et al (Mizuyama) (US 6,813,043) in view of Mantell (US 6,068,361) and further in view of Nabeshima (US 7,099,045).

Regarding claim 25.

Mizuyama discloses an image processing apparatus for executing an error diffusion process to a plurality of density components (**Abstract, col 7, lines 19-37**), comprising:

first processing means for executing the error diffusion process by changing at least one of a quantization threshold value (**e.g. varied the threshold value in brightness, col 12, lines 23-33**) and a quantization diffusion coefficient (**e.g. weight factors are carefully selected, col 7, lines 19-55**) which are used for the error diffusion process on the basis of information on one of the density components to be processed (**e.g. high and low density value, col 8, lines 8-62**); second processing means for executing the error diffusion process by setting, into fixed values, (**e.g. Mizuyama discloses embodiments using fixed saturation threshold, col 14, lines 5-14**) the quantization threshold value and the quantization diffusion coefficient which are used for said the error diffusion process (**e.g. threshold value of brightness & saturation, and weight factor, col 7, lines 19-37, & col 12, lines 23-33**); and error diffusion processing control means for making controlling to execute by the first processing means (**col 12, lines 23-33**) and executing, by the second processing means (**col 14, lines 5-14**).

Mizuyama does not explicitly teach that density components of a similar color among the plurality of density components by executing the error diffusion process to

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the density component whose droplet is small, and the error diffusion process to the density component whose droplet is large.

Mantell teaches density components of a similar color among the plurality of density components by executing the error diffusion process to the density component whose droplet is small (**col 10, line 54 through col 11, line 9**).

Nabeshima teaches the error diffusion process to the density component whose droplet is large (**e.g. output of quantization signal is "high" indicating halftone dot area is large or a halftone-dot area with high density; col 11, lines 45-53**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Mizuyama to include teaches density components of a similar color among the plurality of density components by executing the error diffusion process to the density component whose droplet is small taught by Mantell to improve error diffusion process by eliminating possible color shift (col 10, lines 54-65, Mantell); and then to have modified Mizuyama combining Mizuyama with Tanaka to include the error diffusion process to the density component whose droplet is large taught by Nabeshima to decrease a misjudgment between a halftone-dot area and a character edge area (col 2, lines 54-61, Nabeshima).

Regarding claim 26.

Claim 26 recites identical features as claim 25, except claim 26 is an image process method claim. Thus, arguments similar to that presented above for claim 25 are also equally applicable to claim 26.

Regarding claim 27.

Claim 27 recites identical features as claim 25, except claim 27 is a computer-readable storage medium claim. Thus, arguments similar to that presented above for claim 25 are also equally applicable to claim 27.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on Monday to Friday, from 8:30 am -5:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/S Kau/
Examiner, Art Unit 2625

/King Y. Poon/
Supervisory Patent Examiner, Art
Unit 2625